

CLAIMS

1. A process for manufacturing a metal-infiltrated powder metal part, the process comprising:

compacting a powder metal to form a compact;
forming an infiltrant blank from a wrought metal sheet;
placing the infiltrant blank on top of the compact; and
sintering the compact at a temperature sufficient to form a sintered compact with a matrix having pores and to melt the wrought metal such that the melted wrought metal infiltrates the pores of the matrix.

2. The process of claim 1 wherein:
the powder metal is selected from iron, iron alloys and mixtures thereof;
and
the wrought metal is selected from copper and copper alloys.

3. The process of claim 2 wherein:
the wrought metal sheet has a thickness of less than 1 millimeter.

4. The process of claim 1 wherein:
the infiltrant blank is formed by a method selected from stamping, fine blanking and abrasive water jet cutting.

5. The process of claim 1 further comprising:
forming the infiltrant blank with a locating element that is suitable for engaging a corresponding locating element on the compact; and
placing the infiltrant blank in contact with the compact such that the locating element of the blank engages the corresponding locating element on the compact.

6. The process of claim 5 wherein:
the locating element of the blank is a section of the blank extending outwardly from a body of the blank.

7. A process for manufacturing a metal-infiltrated powder metal part, the process comprising:
compacting a powder metal to form a compact;
sintering the compact at a temperature sufficient to form a sintered compact with a matrix having pores;
forming an infiltrant blank from a wrought metal sheet;
placing the infiltrant blank on top of the sintered compact; and
melting the wrought metal such that the melted wrought metal infiltrates the pores of the matrix.

8. The process of claim 7 wherein:
the powder metal is selected from iron, iron alloys and mixtures thereof;
and
the wrought metal is selected from copper and copper alloys.

9. The process of claim 8 wherein:
the wrought metal sheet has a thickness of less than 1 millimeter.

10. The process of claim 7 wherein:
the infiltrant blank is formed by a method selected from stamping, fine blanking and laser cutting.

11. The process of claim 7 further comprising:
forming the infiltrant blank with a locating element that is suitable for engaging a corresponding locating element on the compact; and
placing the infiltrant blank in contact with the compact such that the locating element of the blank engages the corresponding locating element on the compact.

12. The process of claim 7 wherein:
the locating element of the blank is a section of the blank extending outwardly from a body of the blank.

13. A process for manufacturing a metal-infiltrated powder metal part, the process comprising:

compacting a powder metal to form a compact;

forming an infiltrant blank from a wrought metal sheet, the blank having a locating element that is suitable for engaging a corresponding locating element on the compact;

placing the infiltrant blank in contact with the compact such that the locating element of the blank engages the corresponding locating element on the compact; and

sintering the compact at a temperature sufficient to form a sintered compact with a matrix having pores and to melt the wrought metal such that the melted wrought metal infiltrates the pores.

14. The process of claim 13 wherein:

the powder metal is selected from iron, iron alloys and mixtures thereof;

and

the wrought metal is selected from copper and copper alloys.

15. The process of claim 14 wherein:

the wrought metal sheet has a thickness of less than 1 millimeter.

16. The process of claim 13 wherein:

the infiltrant blank is formed by a method selected from stamping, fine blanking and laser cutting.

17. The process of claim 13 wherein:

the locating element of the blank is a section of the blank extending outwardly from a body of the blank.

18. A process for manufacturing a metal-infiltrated powder metal part, the process comprising:

compacting a powder metal to form a compact;

sintering the compact at a temperature sufficient to form a sintered compact with a matrix having pores;

forming an infiltrant blank from a wrought metal sheet, the blank having a locating element that is suitable for engaging a corresponding locating element on the sintered compact;

placing the infiltrant blank in contact with the sintered compact such that the locating element of the blank engages the corresponding locating element on the sintered compact; and

melting the wrought metal such that the melted wrought metal infiltrates the pores of the sintered compact.

19. The process of claim 18 wherein:

the powder metal is selected from iron, iron alloys and mixtures thereof;

and

the wrought metal is selected from copper and copper alloys.

20. The process of claim 19 wherein:

the wrought metal sheet has a thickness of less than 1 millimeter.

21. The process of claim 18 wherein:

the infiltrant blank is formed by a method selected from stamping, fine blanking and laser cutting.

22. The process of claim 18 wherein:

the locating element of the blank is a section of the blank extending outwardly from a body of the blank.